Title: Measurement of Photo Capacitance in Amorphous Silicon Photodiodes

Author(s): **Goncalves, Dora [1]; Miguel Fernandes, L. [1]; Louro, Paula [1]; Vieira, Manuela [1]; Fantoni, Alessandro [1]**

Source: Technological Innovation for the Internet of Things **Book Series:** IFIP Advances in Information and Communication Technology **Volume:** 394 **Pages:** 547-554 **Published:** 2013

Conference: 4th IFIP WG 5.5/SOCOLNET Doctoral Conference on Computing, Electrical and Industrial Systems, DoCEIS 2013 **Location:** Costa da Caparica, Portugal **Date:** Apr 15-17, 2013 **Sponsor(s):** SOCOLNET; Int Federat Informat Process; IEEE Ind Elect Soc

Document Type: Proceedings Paper

Language: English

Abstract: This paper discusses the photodiode capacitance dependence on imposed light and applied voltage using different devices. The first device is a double amorphous silicon pin-pin photodiode; the second one a crystalline pin diode and the last one a single pin amorphous silicon diode. Double amorphous silicon diodes can be used as (de)multiplexer devices for optical communications. For short range applications, using plastic optical fibres, the WDM (wavelength-division multiplexing) technique can be used in the visible light range to encode multiple signals. Experimental results consist on measurements of the photodiode capacitance under different conditions of imposed light and applied voltage. The relation between the capacitive effects of the double diode and the quality of the semiconductor internal junction will be analysed. The dynamics of charge accumulations will be measured when the photodiode is illuminated by a pulsed monochromatic light.

Author Keywords: Capacitance; Photodiode; Amorphous silicon

Reprint Address: Gonçalves, D (reprint author)- ISEL, Elect Telecommun & Comp Dept, Lisbon, Portugal

Addresses:
[1] ISEL, Elect Telecommun & Comp Dept, Lisbon, Portugal

Publisher: Springer-Verlag Berlin
Publisher Address: Heidelberger Platz 3, D-14197 Berlin, Germany

ISSN: 1868-4238
ISBN: 978-3-642-37290-2

Citation: GONÇALVES, Dora; FERNANDES, L. Miguel; LOURO, Paula; VIEIRA, Manuela; FANTONI, Alessandro - Measurement of Photo Capacitance in Amorphous Silicon Photodiodes. Technological Innovation for the Internet of Things. ISSN 1868-4238. ISBN 978-642-37290-2. Vol. 394 (2013), p. 547-554.